

CLAIMS:

1. An illumination system, comprising a radiation source and a fluorescent material comprising at least one phosphor capable of absorbing a part of light emitted by the radiation source and emitting light of wavelength different from that of the absorbed light; wherein said at least one phosphor is an oxido-nitrido-silicate of general
5 formula

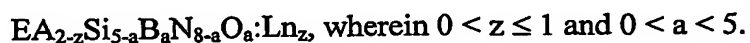
$EA_{2-z}Si_{5-a}B_aN_{8-a}O_a:Ln_z$, wherein $0 < z \leq 1$ and $0 < a < 5$.

- comprising at least one element EA selected from the group consisting of Mg, Ca, Sr, Ba and Zn and at least one element B selected from the group consisting of Al, Ga and In, and being activated by a lanthanide selected from the group consisting of
10 cerium, europium, terbium, praseodymium and mixtures thereof.

2. An illumination system according to claim 1,
wherein the fluorescent material comprises a red phosphor of
15 of general formula $EA_{2-z}Si_{5-a}B_aN_{8-a}O_a:Ln_z$, wherein $0 < z \leq 1$ and $0 < a <$
5 and a green or yellow phosphor.

3. An illumination system according to claim 1,
 wherein the green or yellow phosphor is selected from the group of
 MS:Eu,Ce,Cu comprising at least one element selected from the group M
 $= \text{Mg, Ca, Sr, and Zn}$;
- 5 $\text{MN}_2\text{S}_4\text{:Eu,Ce}$ comprising of at least one element selected from the group
 $\text{M} = \text{Mg, Ca, Sr, and Zn}$ at least one element selected from the group $\text{N} = \text{Al, Ga, In, Y,}$
 La, Gd ,
 $(\text{Re}_{1-r}\text{Sm}_r)_3(\text{Al}_{1-s}\text{Ga}_s)_5\text{O}_{12}\text{:Ce}$, where $0 \leq r < 1$ and $0 \leq s \leq 1$ and Re
 selected from $\text{Y, Lu, Sc, La and Gd}$
- 10 and $(\text{Ba}_{1-x-y-z}\text{Sr}_x\text{Ca}_y)_2\text{SiO}_4\text{:Eu}_z$, wherein $0 \leq x \leq 1$, $0 \leq y \leq 1$ and $0 < z < 1$
4. An illumination system according to claim 1,
 wherein the radiation source is a UV- or blue-emitting LED.
5. An illumination system according to claim 1,
 wherein said radiation source comprises a nitride compound
 semiconductor represented by the general formula $\text{In}_i\text{Ga}_j\text{Al}_k\text{N}$, where $0 \leq i \leq 1$, $0 \leq j \leq 1$,
 15 $0 \leq k \leq 1$ and $i+j+k=1$
6. An illumination system according to claim 1,
 20 wherein the system is a lamp.
7. An illumination system according to claim 1,
 wherein the system is a traffic sign.

8. A phosphor capable of absorbing a part of light emitted by the radiation source and emitting light of wavelength different from that of the absorbed light; wherein said at least one phosphor is an oxido-nitrido-silicate of general formula



5 comprising at least one element EA selected from the group consisting of Mg, Ca, Sr, Ba and Zn and at least one element B selected from the group consisting of Al, Ga and In, and being activated with a lanthanide selected from the group consisting of cerium, europium, terbium and mixtures thereof.

9. A phosphor according to claim 8,

10 of general formula $(\text{Sr}_{1-x}\text{EA}_x)_{2-z}\text{Si}_{5-a}(\text{Al}_{1-b}\text{B}_b)_a\text{N}_{8-a}\text{O}_a:(\text{Eu,Ce})_z$, wherein $0 \leq x \leq 1$ and $0 \leq b \leq 1$.

10. A phosphor according to claim 8, of general formula



11. A phosphor according to claim 8

15 of general formula



12. A phosphor according to claim 8,

wherein silicon is substituted by germanium.